

Simple surgical procedure may help prevent heart damage in children

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Removing enlarged tonsils and adenoids may help prevent high blood pressure and heart damage in children who suffer from obstructive sleep apnea (OSA), according to a study conducted at Cincinnati Children's Hospital Medical Center. In some children with OSA, adenotonsillectomy can result in significantly lower blood pressure within 24 months of the procedure.

The results will be presented at the ATS 2011 International Conference in Denver.

Children with enlarged tonsils and adenoids are particularly prone to developing OSA, said study lead author Lisa Burns, MD, (Pulmonary Fellow at Cincinnati Children's Hospital Medical Center). And, in children and adults, OSA has been linked with elevations in both daytime and nighttime blood pressure. OSA can also interfere with the normal "dip" in blood pressure levels that occur during sleep. Persistent elevations in blood pressure can result in [organ damage](#), including [heart damage](#).

"Our study emphasizes the importance of treating severe [sleep apnea](#) in order to prevent persistent elevation in blood pressure and end-organ damage," Dr. Burns said. "We also show that during sleep, [diastolic blood pressure](#), the measurement of your blood pressure when the [heart](#) is relaxing, is more sensitive to the effects of sleep apnea than other measures of blood pressure."

Dr. Burns and colleagues evaluated 115 children between the ages of 7 and 13 years, including 28 patients with mild OSA, 27 with severe OSA and 60 healthy controls. The subjects were evaluated for level of OSA using polysomnography, a [diagnostic test](#) used to measure breathing during periods of sleep. All OSA subjects had enlarged adenoids and tonsils and underwent [adenotonsillectomy](#). Blood pressure, rest and activity levels, and heart size were measured at the beginning of the study and during follow-up at 12

to 24 months.

At follow-up, researchers found blood pressure levels during sleep decreased following adenotonsillectomy when compared with measurements at baseline. The procedure also restored the normal nighttime "dip" in blood pressure relative to daytime blood pressure, Dr. Burns said.

In addition, in a subset of children with moderate to severe sleep apnea, there was a decrease in heart size after adenotonsillectomy.

Dr. Burns said the results are similar to those obtained from studies of adults with OSA.

"We expected to see changes based on what we know about adults with sleep apnea and its effect on blood pressure," she said. "We know that children with sleep apnea tend to have higher blood pressures than children without sleep apnea, even if these elevations still fall within a normal range. However this is the first study to evaluate how treatment of sleep apnea impacts blood pressure and heart size in a pediatric population who are free from other diseases, which may also contribute to elevations in blood pressure.

Treating OSA in childhood is especially critical, Dr. Burns noted.

"Children who have elevated blood pressure throughout childhood will often go on to develop high blood pressure in adulthood," she said. "Adults with [high blood pressure](#) are at risk for other cardiovascular diseases, such as heart attacks, stroke, and heart failure. By identifying and treating elevations in blood pressure at an earlier age through treatment of OSA, we hope to prevent development of cardiovascular disease in childhood and later in life."

Future studies should investigate the mechanisms

leading to blood pressure changes with sleep apnea, she added.

Provided by American Thoracic Society

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